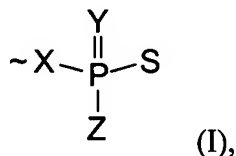


IN THE CLAIMS

1. (currently amended) A hairpin polynucleotide, having a loop and a stem region, characterised in that the hairpin polynucleotide comprises a sulfur-based nucleophile, wherein the sulfur-based nucleophile is a moiety of the formula (I):



wherein ~ denotes ~~the bond or~~ a linker connecting the sulfur-based nucleophile to the remainder of the polynucleotide; X represents an oxygen atom, a sulfur atom or a group NR, in which R is hydrogen or an optionally substituted C<sub>1-10</sub> alkyl; Y represents an oxygen or a sulfur atom; and Z represents an oxygen atom, a sulfur atom or an optionally substituted C<sub>1-10</sub> alkyl group, and wherein the sulfur-based nucleophile is attached to the base of an internal nucleotide or to the 1'-carbon atom of an abasic internal nucleotide in the hairpin through a linker to enable binding to a solid support.

2. (original) The hairpin polynucleotide as claimed in claim 1 wherein the internal nucleotide is present in the loop of the hairpin.

3. (canceled).

4. (previously presented) The hairpin polynucleotide as claimed in claim 1 wherein X is oxygen, sulfur, or NH.

5. (previously presented) The hairpin polynucleotide as claimed in claim 1 wherein Y is oxygen.

6. (previously presented) The hairpin polynucleotide as claimed in claim 1 wherein Z is an oxygen or sulfur atom or a methyl group.
7. (previously presented) The hairpin polynucleotide as claimed in claim 1 wherein the sulfur-based nucleophile is a thiophosphate moiety.
8. (previously presented) The hairpin polynucleotide as claimed in claim 1 comprising a DNA or an RNA.
9. (canceled).
10. (canceled).
11. (previously presented) A hairpin polynucleotide as claimed in claim 1 wherein said linker is selected from the group comprising polyethylene glycol of formula  $-(CH_2-CH_2-O)_m$  (wherein m is an integer of from about 1 to about 600), dextrose, peptides, nucleic acids or modified or unmodified chain of formula  $-(CH_2)_n$  (wherein n is an integer of from about 1 to about 1,500).
12. (original) A hairpin polynucleotide as claimed in claim 11 wherein the linker comprises a modified chain of formula  $-(CH_2)_n$  wherein n is less than 100 and the modifications comprise the replacement of one or more than one  $CH_2$  units for functional groups selected from the group comprising ketones, esters, amines, amides, ethers, thioethers, sulfoxides, sulfones, alkene, alkyne, aromatic or heteroaromatic moieties or cyclic aliphatic moieties.
13. (original) The hairpin polynucleotide as claimed in claim 12 wherein the modified chain comprises one or more amide bonds and one or more carbon-carbon triple bonds.
14. (previously presented) The hairpin polynucleotide as claimed in claim 11 wherein the

linker comprises a propargylamino unit.

15. (previously presented) The hairpin polynucleotide as claimed in claim 1 comprising a first target polynucleotide attached to the 5' end of the hairpin.

16. (original) The hairpin polynucleotide as claimed in claim 15 wherein said first target polynucleotide is genomic DNA.

17. (previously presented) The hairpin polynucleotide as claimed in claim 15 wherein said first target polynucleotide is human genomic DNA.

18. (previously presented) The hairpin polynucleotide as claimed in claim 1 comprising a primer attached to the 3' end of the hairpin.

19. (previously presented) The hairpin polynucleotide as claimed in claim 1 wherein the stem comprises a 5 to 25 base pair double-stranded region.

20. (previously presented) The hairpin polynucleotide as claimed in claim 1 wherein the loop comprises 2 or more non-hybridised nucleotides.

21. (previously presented) The hairpin polynucleotide as claimed in claim 1 formed from 2 or more separate polynucleotides with complementary regions and a loop which comprises a non-nucleotidic connecting moiety.

22. (original) The hairpin polynucleotide as claimed in claim 21 wherein said linker moiety comprises PEG.

23. (previously presented) A method of making a hairpin polynucleotide, as defined in claim

1, comprising attaching the sulfur-based nucleophile to said internal nucleotide before, after or during formation of the hairpin polynucleotide.

24. (previously presented) An array of hairpin polynucleotides as defined in claim 1 immobilised on a surface of a solid support.

25. (original) The array as claimed in claim 24 which is a single molecular array.

26. (previously presented) The array as claimed in claim 24 wherein said solid support comprises glass, ceramics, glass silicon or plastics.

27. (previously presented) The array as claimed in claim 24 wherein said solid is a glass slide.

28. (previously presented) The array as claimed in claim 24 wherein the hairpin polynucleotides are immobilised by covalent bonding.

29. (original) The array as claimed in claim 28 wherein said covalent bonding is formed between the sulfur-based nucleophile and an electrophilic group displayed on the surface of the solid support.

30. (original) The array as claimed in claim 29 wherein said electrophilic group is attached to a silicon atom.

31. (original) The array as claimed in claim 30 wherein said surface is modified so that it in part comprises a silane of formula  $R_nSiX_{(4-n)}$  (where R is an inert moiety that is displayed on the surface of the solid support, n is an integer of from 1 to 4 and X is or comprises a reactive leaving group).

32. (previously presented) The array as claimed in claim 29 wherein the electrophilic group is formed from bromoacetamide functionality.

33. (previously presented) A method of making an array as defined in claim 24 comprising the steps of:

- (i) preparing a plurality of said hairpin polynucleotides; and
- (ii) immobilising said hairpin polynucleotides to a surface of a solid support so as to form said array.

34. (original) The method of making an array of hairpin polynucleotides as claimed in claim 33 comprising an additional subsequent step of ligating a second target polynucleotide to each hairpin polynucleotide after they have been immobilised to the surface of the solid support.

35. (original) The method of making an array as claimed in claim 34 wherein said second target polynucleotide is genomic DNA.

36. (previously presented) The method of making an array as claimed in claim 34 wherein said second target polynucleotide is human genomic DNA.

37. (previously presented) The method of making an array as claimed in claim 33 wherein either or both of said first and second target nucleotides is or are attached to the hairpin polynucleotides by ligating one strand of the target nucleotide in the form of a double-stranded DNA to the hairpin polynucleotide and removing the other strand after the ligation.

38. (previously presented) A device comprising an array as defined in claim 24.

39. (canceled).

40. (previously presented) An analytical procedure to determine the sequence of the first target polynucleotide, comprising interrogating the hairpin polynucleotides of the device of claim 38.